

Remarks

Twenty-eight claims were originally filed in this case. All claims currently stand rejected and claims 26-28 are objected to. With this amendment, Applicants have amended claims 1-13, 16, 20-22, 24, and 26-28. Reconsideration of the application in view of the above changes and
5 the following remarks is respectfully requested.

The drawings are objected to in paragraph 1 of the office action. Formal drawings will be submitted upon receipt of an indication of allowable subject matter.

The disclosure is objected to in paragraph 2 of the office action and the specification is amended herein accordingly to comply with the Examiner's suggestions.

10 Claims 26 is objected to for lack of recitation of the word "of" after "steps". Claim 26 has been amended to remove the objection. Claim 27 is objected to for failing to recite a claim to which claim 27 is dependent. Claim 27 has been amended to depend from claim 26. Claim 28 is objected to for failing to recite an "a" after "using" on line 8. Claim 28 has been amended to provide proper antecedent basis. Therefore, Applicants submit that these amendments overcome
15 the Examiner's objections.

Claims 4 and 16 have been rejected under 35 U.S.C. §112, first paragraph, in paragraph 4 of the office action. Claims 4 and 10 are rejected for reciting a "decoder compresses." Both claims 4 and 10 have been amended to recite an "encoder compresses." As amended, Applicants submit that claims 4 and 10 now define claims with sufficient particularity to enable one of
20 ordinary skill in the art to make and use the invention.

Claims 10-12, 22-24, and 27-28 have been rejected under 35 U.S.C. §112, second paragraph, in paragraph 8 of the office action. Claims 10 and 22 are rejected for reciting a trademark. Claims 10 and 22 have been amended to replace the trademark with a generic

description. Claim 24 is rejected for failing to provide antecedent basis for the limitation "said memory circuit." Accordingly, claim 24 is amended to recite "the local memory." Claim 28 is rejected for failing to provide antecedent basis for the limitation "the upscaled image." Claim 28 is amended to provide antecedent basis by reciting "an upscaled image." Applicants submit that the claims now recite the subject matter which Applicants regard as the invention with sufficient particularity to be patentable.

In paragraph 10 of the office action, claims 1-6 and 24-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over the admitted prior art in the Background of the specification in view of U.S. Patent 4,691,233 assigned to Acampora.

The Applicants thank the Examiner for the Examiner's very helpful remarks and Interview Summary from the interview of May 3, 1999.

The claims have been amended herein in accordance with the Examiner's suggestions. More specifically, the Examiner stated that the claims should more clearly indicate that the encoder and decoder functionality are performed on an integrated circuit. Additionally, the Examiner stated that claims should more clearly recite the receiving functionality of the graphics controller, and the limitation of receiving uncompressed data. Therefore, independent claim 1 now recites a "graphics controller **integrated circuit**" for upscaling a source video image in which the source video image is **transmitted by a processing unit** comprising a plurality of **uncompressed** scan lines. The claim further recites an encoder circuit which is "**integrated into the graphics controller integrated circuit**" for "receiving a set of **uncompressed** pixel data" from the processing unit, and a decoder circuit which is "**integrated into the graphics controller integrated circuit**" (emphasis added).

Therefore, the apparatus of claim 1 now clearly recites a graphics controller integrated circuit device which receives uncompressed data within the integrated circuit, compresses the data using an encoder which is integrated into the graphics controller, and decompresses the compressed data using a decoder integrated into the graphics controller. The claimed invention
5 thereby provides the benefits of minimizing the access time to memory of a graphics controller in performing scan line interpolation. The Acampora reference, as discussed in the interview, does not disclose a single device which performs encoding and decoding functionality. Rather, Acampora merely discloses a transmitter device which transmits compressed data and a receiver device which receives the compressed data and decompresses the data. The Background merely
10 discloses a graphics controller which does not perform any compression or decompression. Thus, Acampora in combination with the Background fails to disclose, teach, or suggest the recited elements of claim 1. Therefore, in light of the amendments to claim 1, Applicants submit that claim 1 is patentable over the cited references. Independent claims 13, 24, and 28 are amended similarly, and are ^{therefore} patentable over the cited references.

15 Claims 2-6, and 25-27 recite patentable features which, in combination with the features discussed above, are not disclosed by the background in view of Acampora. For example, claim 2 recites a display memory "for storing the set of uncompressed pixel data for the first scan line and the set of uncompressed pixel data for the second scan line" which is not disclosed, taught, or suggested by Acampora or the background as discussed above. Claims 3 recites a graphics
20 controller integrated circuit wherein the "decoder circuit comprises a DPCM decoder and the encoder circuit comprises a DPCM encoder." A graphics controller having a DPCM decoder or a DPCM encoder are not disclosed, taught, or suggested by either Acampora or the background. Claim 4 recites a DPCM encoder which "compresses the set of pixel data for the first scan line"

which is not disclosed, taught, or suggested by Acampora or the Background, neither of which describe compression at the receiver end of a system, as discussed above. Claim 5 recites a graphics controller integrated circuit having the features of claim 1 where the interpolator comprises "a polyphase interpolator," and is therefore submitted to be patentable in combination with the features of claim 1. Claim 6 recites the further limitation of an encoder having a first adder which receives uncompressed data which, as discussed above, is not disclosed, taught, or suggested by Acampora or the Background. As amended, claims 2-6 are therefore submitted to be patentable over the cited references. As claims 25-27 recite similar limitations to claims 2-4, these claims are also submitted to be patentable over the cited references.

Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over the Background in view of Acampora, Sabri, and Jones. Claim 7 further limits claim 6 by more specifically reciting circuitry to perform the function of the integrated encoder, e.g., "a set of flip-flops each for storing a bit of the output of the second adder." As discussed above, the Background and Acampora do not disclose, teach, or suggest the features of claim 1. This deficiency is not cured by Sabri and Jones that merely disclose a DPCM encoder. None of these references recite a graphics controller integrated circuit which receives uncompressed video data for compression using an encoder integrated into the integrated circuit, as discussed above, and the combination of these references does not disclose, teach, or suggest the use of the flip-flops recited in claim 7. Therefore, claim 7 is submitted to be patentable over the cited references.

Claims 8 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Background, Acampora and Zschunke. Claims 8 and 9 further limit claim 1 by reciting an override circuit to "avoid a overload condition in DPCM decoding and encoding." As discussed above, the Background and Acampora do not disclose the features of claim 1. The addition of

Zschunke does not cure this deficiency. Zschunke merely discloses a device providing differential pulse code modulation (DPCM). However, none of the cited references disclose, teach, or suggest, as recited in claims 8 and 9, an override circuit to avoid a overload condition in DPCM decoding and encoding in combination with the features recited in claim 1. Therefore, claims 8 and 9 are submitted to be patentable over the cited references.

Claims 10-12 are rejected under 35 U.S.C. §103(a) over the Background, Acampora, Zschunke, and Bindlish. Claim 10 further limits claim 1 by reciting a video motion block comprising "the DPCM encoder, the DPCM decoder, the override and the local memory." As discussed above, neither the Background, Acampora, and Zschunke disclose, teach, or suggest the claimed features of claim 1, and they do not teach those features as recited with greater specificity in claim 10. The addition of Bindlish does not cure this deficiency. Bindlish merely discloses a video controller without compression functionality. Therefore, none of the cited references disclose, teach or suggest a graphics controller integrated circuit comprising a DPCM encoder and DPCM decoder integrated into the graphics controller integrated circuit, as discussed above. Therefore, claim 10 is submitted to be patentable over the cited references. Claim 11 recites the outbound stages of the invention of claim 1, e.g., a " video controller for sending a set of graphics pixels" and claim 12 recites with more specificity the inbound stage of the invention of claim 1, e.g., "encoder circuit receives pixel data of the first scan line from a display memory." The combination of references cited by the Examiner does not disclose, teach, or suggest these claimed features in combination with the claimed features of claim 1, as discussed above.

Claims 13-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Background in view of Acampora and Bindlish. Claim 13 is amended to recite a "graphics

controller integrated circuit receiving the uncompressed pixel data of said source video image from the processing unit" comprising an "encoder circuit integrated into the graphics controller integrated circuit for receiving a set of uncompressed pixel data" and a "decoder circuit integrated into the graphics controller." As discussed above, these features are not disclosed by the Background, Acampora, and Bindlish. Therefore, Applicants submit that claim 13 is patentable over the cited references. Claims 14-18 recite limitations similar to claims 2-6, and are submitted to be patentable over the cited references for the reasons discussed above.

Claim 19 is rejected under 35 U.S.C. §103(a) as being unpatentable over the Background in view of Acampora and Bindlish, and further in view of Sabri and Jones. Claim 19 recites limitations similar to claim 7, and is therefore submitted to be patentable over the cited references for the reasons discussed above.

Claims 20-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Background in view of Acampora and Bindlish, and further in view of Zschunke. Claims 20-23 recite limitations similar to claims 8-11, and are therefore submitted to be patentable over the cited references for the reasons discussed above.

Claim 28 is rejected under 35 U.S.C. §103(a) as being unpatentable over the Background in view of Acampora and Bindlish, and further in view of Bindlish. Claim 28 recites limitations similar to claim 1, and is therefore submitted to be patentable over the cited references for the reasons discussed above.

With the above amendments to claims, Applicants submit that claims 1-28 are patentably distinct over the cited art and are now in condition for allowance.

In paragraph 18 of the office action, the Examiner rejects all claims based on a non-statutory double patenting rejection. A terminal disclaimer is submitted herewith to overcome this rejection.

Applicant respectfully requests a 3-month extension of time in responding to the above-identified office action and has also enclosed a check for the requisite fee for the 3-month extension of time in responding to the above-identified office action.

In view of the foregoing arguments, Applicants respectfully submit that the claims presently in this case are now in condition for allowance. Reconsideration and prompt favorable action are therefore solicited.

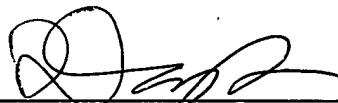
Respectfully submitted,

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